

H. Pope Hennessy on notes on some West African tribes north of the Benue, were laid before the Section.

The usual reports of various Committees were read at various times, the most voluminous being that of the Ethnographic Survey of Canada. It stated that during the past year the work of the Committee had been extended in important directions. The introduction into the North-west of large bodies of Europeans who were to become permanently incorporated in the population suggested the importance of securing as soon as possible such facts relating to their general ethnology as might seem to establish a suitable basis for the study of these people under the influence of their new environment. Satisfactory arrangements had been made with respect to Russian refugees known as the Doukbohors, and it was probable that similar arrangements might be completed during the coming year with regard to other large bodies of immigrants. The exceptional circumstances in British Columbia, the fact that it was becoming more difficult each year to obtain trustworthy accounts of its people, the rapid disappearance of old customs, dress, and modes of living had seemed sufficient reasons for devoting to their study a much larger share of the resources of the Committee than might otherwise appear justifiable. An appendix contained an account of early Canadian settlers and studies of the Indians of British Columbia. On the whole Section H may be congratulated on the very uniform high excellence of the papers, it probably being one of the very best meetings that the Section has ever had.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—A meeting of the Junior Scientific Club was held in the University Museum on Wednesday, November 1. After private business, Mr. F. C. Lees (Hertford) read a very interesting paper on geysers in action, exhibiting also an excellent working model. A brisk discussion afterwards ensued.—Mr. Gibson (Ch. Ch.) also read his paper on the retention of plant-food in the soil, which had been postponed from the previous meeting.

CAMBRIDGE.—At the annual election on November 6, at St. John's College, the following were elected Fellows: Mr. W. A. Houston, fifth Wrangler 1896 and Smith's Prizeman 1898, Lecturer in Mathematics at University College, Liverpool; Grafton Elliot-Smith, B.A. 1898, M.D. of the University of Sydney. Dr. Elliot-Smith, who entered the University in 1896 as an Advanced Student, has made a number of highly important contributions to the comparative anatomy of the brain, and is one of the assistant-demonstrators of anatomy under Prof. Macalister.

The Council of the Senate propose that, having regard to the extensive and valuable collections procured for the University by the Torres Straits Expedition, a further grant of 100% (making 550% in all) be made from the Worts Travelling Scholars' Fund to Dr. Haddon towards the expenses of the expedition.

Mr. C. Hose, of Borneo, has presented to the Museum of Zoology a fine example of the ourang outan's nest. A collection of skeletons and skulls of the extinct Moriori race, which formerly inhabited the Chatham Islands, has been acquired for the Museum of Anatomy.

Mr. Timothy Holmes has been added to the Medical School Buildings Syndicate. It is understood that the plans for the buildings are in a forward state of preparation.

Mr. F. W. B. Frankland, third Wrangler in 1897, has been elected to a Fellowship at Clare College.

MR. HORACE PLUNKETT, M.P., has been appointed vice-president of the new department of Agriculture and Technical Education for Ireland.

THE educational movement in Wales has afforded an exceptional opportunity of bringing the Principality into the front rank in the matter of scientific education, and it cannot fail to be a matter of regret to well-wishers of the movement to notice indications that the "modern side" of education is not developing to the same extent in Wales as in other countries. In the recent scholarship examination at the University College of North Wales only six science candidates presented themselves, of whom three were not Welsh, while twenty-five candidates intending to qualify in arts entered.

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AMONG other agencies by which the Technical Education Committee of the Essex County Council is cultivating scientific knowledge is the County School of Horticulture at Chelmsford, the prospectus of which is before us. The aim of the School is to impart sound elementary instruction in the best methods of cultural treatment, based upon a knowledge of the structure and physiology of plants. The garden attached to the School covers an area of three acres, and is entirely devoted to educational uses. Horticultural and botanical students in Essex are fortunate in possessing an institution in which wisely planned courses of work upon plants can be followed under such good conditions as are available at Chelmsford.

THE purposes for which the Technical Education grant is used in the various counties are shown concisely in a document just published by the County Councils Association. The counties are arranged alphabetically, and under each is given information concerning the work done in regard to (a) schools of science and art, (b) technical institutes, (c) agricultural schools and institutes, (d) domestic economy schools and institutes, (e) day or other schools or classes giving instruction in agricultural, commercial, domestic, manual or technological subjects. The Returns (which refer to 1897-98) also show the number of scholarships and exhibitions given by each County Council, and the provision made for examination and inspection of classes.

REPORTS received from time to time, referring to the work carried on under the auspices of Technical Education Committees of County Councils, show that in many agricultural counties the committees are gradually building up a system of teaching and experiment which serves much the same purpose as the educational branches of the agricultural experiment stations in the United States and elsewhere. In Somerset, for instance, the committee, of which Mr. C. H. Bothamley is the director, have organised courses of instruction in most branches of agricultural work; and the instructors not only lecture, but visit farms, gardens and orchards for the purpose of giving information and advice, for which no fees are charged, on points, both general and special, arising in agricultural practice, such as the manuring of arable and grass land, the treatment of wire-worm, farm buildings, water supply, and similar matters. On one farm the failure of the mangold crop for the second year in succession was found to be due to an attack of large numbers of a very minute beetle, which Miss Ormerod identified as what is known as the pigmy mangold beetle, an insect which rarely occurs in sufficient numbers to be injurious, and which was in fact first recognised in this country in 1896. It is satisfactory to read that information has been given by several farmers to whom previous visits have been paid, to the effect that favourable results have followed the adoption of the methods suggested by the county instructor. A scheme for the establishment of an experimental farm has been drawn up, and will be put into effect as soon as the Secondary Education Bill is passed. School gardens are already carried on at several places in the county, and with much success. In other sciences, as in agriculture, the Somerset Education Committee appear to be proceeding on the right lines, and good results must attend efforts so wisely directed.

THE U.S. *Experiment Station Record* gives information concerning an extensive system of agricultural education which the Government of Russia is organising. The scheme provides for (1) higher education, furnished by independent agricultural institutes situated in the chief agricultural zones of Russia, and by chairs of agriculture and allied sciences in the universities; (2) agricultural high schools, which are in the nature of technical schools, and schools with courses in agriculture; (3) lower agricultural schools; and (4) the diffusion of general agricultural information. The schools for the so called lower education include (a) secondary agricultural schools, (b) primary agricultural schools, (c) agricultural classes, and (d) practical agricultural courses. These lower schools are to be under the jurisdiction of the minister of agricultural and imperial domains. They are to be maintained at the expense of municipalities, local communities, associations, &c., but may receive a part of their support from the Government. The secondary schools are to be established on Government land, or land donated for that purpose. The other lower agricultural schools may be established on private estates. The secondary schools are open to young men of all conditions who have completed the course in the primary public schools. The diffusion of general agricultural information is to be provided for by the organisation

of public readings or lectures on agricultural questions for the benefit of different classes of the population, instruction of the teachers in public schools in agriculture, horticulture, gardening, apiculture, &c., and providing the public schools with small plots of land and means for cultivating the same; also by the teaching of agriculture in the normal schools, and the introduction of supplementary courses in agriculture in the village schools. There are now in Russia three schools for higher agricultural instruction, nine agricultural high schools, eighty-three lower schools, and fifty-nine special courses. Steps have already been taken for the establishment of about fifty additional agricultural schools.

### SCIENTIFIC SERIALS.

*American Journal of Mathematics*, vol. xxi. No. 4, October. —Memoir on the substitution-groups whose degree does not exceed eight, by Dr. G. A. Miller (pp. 287–338), is an exhaustive piece of work, amply furnished with bibliographical notes. The author's aim is to give enough of the general theory of group construction to find all the possible groups whose degree does not exceed eight without any tentative processes. The earliest work that gives considerable attention to substitution-groups is stated to be that by Ruffini, entitled "Teoria generale delle equazioni, in cui si dimostra impossibile la soluzione algebrica delle equazioni generali di grado superiore al quarto" (1799). The author has won his spurs in this field, and the present memoir shows a thorough mastery of his subject. There is a good table of contents appended. —On a class of equations of transformation, by J. Westlund. In this paper the writer discusses those equations whose roots are the  $n + 1$  values of

$$\gamma_{\mu} = \prod_{\nu=1}^{\beta} \sin^{\alpha_{\nu}} \cdot \cos^{\beta} \cdot d\nu \quad (4\beta\omega/\kappa),$$

where  $\alpha$ ,  $\beta$ ,  $\gamma$ , are any positive or negative integers, and

$$\omega = \frac{4\mu\kappa + 4\nu\kappa}{n},$$

$\mu$  and  $\nu$  being integers. For the notation reference is made to Weber, "Elliptische Functionen," § 67. —Dr. Wilczynski, in an article entitled "On Linearoid Differential Equations," follows up a previous article in the *Journal* (April 1899). This he looks upon as being a reconnaissance upon a new field of promise. *Linearoid* "suggests" the relation of the present equations to linear differential equations. —Prof. W. H. Metzler contributes a short note on the roots of a determinantal equation. The theorem is similar to one discussed by Dr. T. Muir in vol. xix. (pp. 312–318). —Non-quaternion number-systems containing no skew units, by Dr. Starkweather, opens with a brief statement of a few properties of number-systems in general. Then follows a proof of a statement made by Scheffers (*Math. Ann.* xxxix. 306, 310) as to the possibility, in this special class of number-systems, of a selection of units having certain simple multiplicative properties. He then shows that the units can be chosen so as to give in general a very much simplified form of multiplication table, and a method is given for deriving systems of the type considered in  $n$  units from those in  $(n-1)$  units. Application of the principles he deduces is made to systems, the degree of whose characteristic equation is two less than the number of units. Other points are discussed, and a table of all the possible non-equivalent forms is given.

VOL. VI. of the *Anales del Museo Nacional de Buenos Aires* contains the following papers: —Contributions to our knowledge of the herpetological fauna of Argentina and the neighbouring countries, by C. Berg; some cases of vegetable teratology, fasciation, proliferation, and synanthry (three plates), by A. Gallardo; species of *Ampullaria* of the Argentine Republic, by H. von Ihering; diagnostics of new South American Diplopoda, by F. Silvestri; new or critical Argentinian fungi (two plates), by C. Spegazzini; observations on Argentinian and other South American Lepidoptera, by C. Berg; brief comparative description of *Lepidocampa* and *Campodea* (two plates), by F. Silvestri; new South American Tenthredinidae, by F. W. Konow. Of these the fifth only is in Latin, and the last in German; the remainder are in Spanish.

THE numbers of the *Journal of Botany* for October and November are chiefly occupied by papers on descriptive and geographical botany. These are varied by an article, by Mr.

E. S. Salmon, on certain peculiar structures found on the peritheces of the parasitic fungus *Phyllactinia corylea*, which appear to have a function in connection with its dissemination. The degeneration of these structures produces mucilage, by which the perithece of the fungus is firmly attached to the leaf of the host-plant.

### SOCIETIES AND ACADEMIES.

#### LONDON.

**Entomological Society**, October 4. —Mr. G. H. Verrall, President, in the chair. —The President announced the death, at the advanced age of eighty-six years, of M. Hippolyte Lucas, an Honorary Fellow of the Society. He also announced the death of Mr. Samuel Stevens, and in reference thereto said the Society had to deplore the loss of one of its oldest and most highly esteemed Fellows. —Mr. J. J. Walker exhibited a specimen of *Galerita bicolor*, Drury, a North American beetle of the family Carabidae, said to have been taken many years ago at Doncaster. He also exhibited a remarkable variety of *Vanessa urticae*, L. (*ichnusoides*, De Selys), which was captured in the Isle of Sheppey on August 28. —Mr. B. A. Bower showed dark aberrations of *Boarmia rhomboidaria*, Hb., in which the normal colour of the fore wings is replaced by dark brown, causing the fuscous markings to stand out very prominently. —Mr. C. J. Wainwright exhibited a number of Dipterous insects, including a long series of *Anthrax paniscus*, Rossi, taken in Cornwall at the end of July and beginning of August; a series of *Eumerus ornatus*, Mg., from Herefordshire, and *Eumerus lunulatus*, Mg., from Cornwall; and a specimen of *Mallota eristaloides*, Loew, taken near Hereford last July. —Mr. H. J. Donisthorpe exhibited specimens of *Dytiscus dimidiatus*, Berg., and *D. circumcinctus*, Ahr., taken last August in Wicken Fen. He also showed eight specimens of *Athous rhombeus*, Oliv., taken last June in the New Forest. —The Rev. F. D. Morice exhibited three female specimens of *Exoneura libanensis*, Friese, taken at Brumana on Mount Lebanon, near Beirut. He commented upon the remarkable distribution of the genus *Exoneura*, Smith, this genus having been hitherto recorded only from Australia. —Mr. G. J. Arrow read a paper on sexual dimorphism in the Rutelid genus *Parastasia*. —Mr. W. L. Distant contributed descriptions of four new species of Cicadidae, and Mr. Claude Fuller a paper on some species of Western Australian Coccidae.

**Royal Microscopical Society**, October 18. —Mr. E. M. Nelson, President, in the chair. —The President called attention to an old microscope by Cary, presented to the Society by Mr. Gleadow. An instrument of the same design was figured in the *Journal* for 1893, p. 474. —Messrs. Watson and Sons exhibited their new school microscope, which was provided with a diagonal rack and pinion coarse adjustment, but no fine adjustment, their idea being to produce a strong well-made instrument at a low price. Dr. Dallinger had seen this instrument, and thought it would admirably answer the purpose for which it was intended; the coarse adjustment was so well made that he had no difficulty in focussing a  $\frac{1}{8}$ " objective with it. The President thought the microscope was strongly made and well fitted, and would be found to be a very useful instrument. Messrs. Watson also exhibited a new form of eye-piece, named the "Holoscopic," which was fitted with an adjustment to render it either over- or under-corrected and suitable for use with either achromatic or apochromatic objectives. —Dr. Measures exhibited a microscope for photo-micrography, made by Zeiss, having a new form of fine adjustment which admitted of the arm being made of any length without throwing extra weight upon the fine adjustment screw. Dr. Dallinger considered the way in which the speed of the fine adjustment had been reduced was most ingenious; the motion was extremely slow, being only  $\frac{1}{8125}$ " for every revolution of the screw. A protest had always been made in the Society against the fine adjustment having to carry much weight, and it was therefore satisfactory to find that this one had to lift only one-fifth of the weight usually put upon the fine adjustment. The President said the application of an endless screw was a novel way of slowing down the fine adjustment; the reduction of weight upon the thread was an important improvement, and the increased length of arm was another good feature. —The President then described a new form of fine adjustment by Reichert, which was shown applied to his Austrian model, exhibited by Mr.